

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Bernhard Kuhn)
Serial No.: 10/536,789)
Filed: November 14, 2005)
U.S. National Phase of)
PCT/EP2003/013089 filed November)
21, 2003)
For: MEDICAL OR DENTAL)
HANDPIECE WITH MULTI-STAGE)
TRANSMISSION ARRANGEMENT)
Group Art Unit: 3732)
Examiner: Melba N. Bumgarner)

AMENDMENT "A"

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please consider the remarks set forth below:

The amendments to the claims section (including a complete listing of claims)
begins on page 2 of this paper; and

The remarks section begins on page 14 of this paper.

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) Medical or dental handpiece comprising a treatment tool driven by a drive part via a transmission arrangement, the transmission arrangement containing at least two planetary transmission stages connected one after another, each of which has
 - a sun gear mounted on a drive shaft,
 - a planetary gear carrier having a plurality of uniformly distributed planetary gears cooperating with the sun gear, and
 - a hollow gear, fixed to a housing, surrounding the planetary gears, and having an inner toothed ring,the planetary gear carrier of at least one transmission stage serving as drive shaft and carrier of the sun gear of a following transmission stage,

wherein

the drive shaft for each transmission stage extends beyond the sun gear driven thereby and the planetary gear carrier associated with this sun gear is arranged rotatably on a portion the extension of said drive shaft that extends beyond the sun gear.

2. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

the planetary gear carriers of all transmission stages are hollow shafts and the extension of the drive shaft for the first transmission stage extends substantially over the entire length of the transmission arrangement, centrally through openings formed in the planetary gear carriers.

3. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

the planetary gear carriers are slidably mounted with respect to the drive shafts engaging therein.

4. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

the sun gears and the planetary gears of the individual transmission stages have in each case identical dimensions.

5. (Previously Presented) Medical or dental handpiece according to
claim 4,

wherein

the hollow gears for all transmission stages are formed by means of a single
sleeve-like component having an inner toothings.

6. (Currently Amended) Medical or dental handpiece comprising a
treatment tool driven by a drive part via a transmission arrangement,

wherein the transmission arrangement comprises at least two planetary
transmission stages connected one after another, each of which has

- a sun gear mounted on a drive shaft,
- a planetary gear carrier having three uniformly distributed planetary gears
cooperating with the sun gear, and
- a hollow gear, fixed to a housing, surrounding the planetary gears, and
having an inner toothings,

the planetary gear carrier of at least one transmission stage serving as drive
shaft and carrier of the sun gear of the following transmission stage,

wherein

the hollow gears for all transmission stages are formed by a single sleeve-like
component having an inner toothings, and the drive shaft extends beyond the sun gear.

7. (Previously Presented) Medical or dental handpiece according to
claim 6,

wherein

the sun gears and the planetary gears of the individual transmission stages
have in each case identical dimensions.

8. (Currently Amended) Medical or dental handpiece according to
claim 6

wherein

~~the drive shaft for each transmission stage is extended beyond the sun gear
driven thereby and the planetary gear carrier associated with this sun gear is arranged
rotatably on a portion of the drive shaft that extends beyond the sun gear the
extension.~~

9. (Previously Presented) Medical or dental handpiece according to
claim 8

wherein

the planetary gear carriers of all transmission stages are formed as hollow
shafts and the extension of the drive shaft for the first transmission stage extends
substantially over the entire length of the transmission arrangement, centrally through
openings of formed in the planetary gear carriers.

10. (Previously Presented) Medical or dental handpiece according to
claim 8

wherein

the planetary gear carriers are slidingly mounted with respect to the drive
shafts engaging therein.

11. (Currently Amended) Medical or dental handpiece according to
claim 1,

wherein ~~either or both~~ at least one of the handpiece and the transmission
arrangement has ~~or have~~ a respective housing and
the drive shaft for the first transmission stage is mounted with respect to the
handpiece housing or a transmission housing by a ball bearing.

12. (Currently Amended) Medical or dental handpiece according to
claim 1,

wherein ~~either or both~~ at least one of the handpiece and the transmission
arrangement has ~~or have~~ a respective housing and
the planetary gear carrier of the last transmission stage is mounted with respect
to the handpiece housing or a transmission housing by means of at least one ball
bearing.

13. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

the planetary gear carriers of the transmission stages in each case carry three
planetary gears.

14. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

components of the transmission stages at least partially comprise ceramic
material.

15. (Previously Presented) Medical or dental handpiece according to
claim 14,

wherein

the drive shafts or planetary gear carriers of the transmission stages comprise a
ceramic material.

16. (Currently Amended) Medical or dental handpiece according to
claim 14,

wherein

~~the sun gear and the planetary gears of the transmission stages~~ comprise a
ceramic material.

17. (Previously Presented) Medical or dental handpiece according to
claim 14,

wherein

the ceramic material is silicon nitride.

18. (Currently Amended) Medical or dental handpiece according to
claim 1,

wherein

the ~~transmission arrangement is of~~ two planetary transmissions are connected
one after the other.

19. (Previously Presented) Medical or dental handpiece according to
claim 1,

wherein

the transmission stages have in each case a transmission ratio of 3:1.

20. (Currently Amended) Medical or dental handpiece according to
claim 1,

wherein

the at least two planetary transmission stages ~~components of the transmission
arrangement~~ are arranged in a sleeve-like transmission housing.

21. (Previously Presented) Medical or dental handpiece according to
claim 20,

wherein

the transmission arrangement can be emplaced in the handpiece, or removed
therefrom, as a structural unit.

22. (Currently Amended) Medical or dental handpiece comprising a
treatment tool driven by a drive part via a transmission arrangement,
wherein the transmission arrangement contains at least one planetary
transmission, which has

- a sun gear mounted on a drive shaft, the drive shaft extending beyond the sun
gear,
- a planetary gear carrier having a plurality of uniformly distributed planetary
gears cooperating with the sun gear, and
- a hollow gear, fixed to a housing, surrounding the planetary gears, and
having an inner toothed ring,

and wherein

components of the planetary transmission comprise ceramic material.

23. (Previously Presented) Medical or dental handpiece according to
claim 22,

wherein

the drive shaft or planetary gear carrier of the planetary transmission
comprises a ceramic material.

24. (Currently Amended) Medical or dental handpiece according to
claim 22,

wherein

the sun gear and the planetary gears of the planetary transmission comprises
comprise a ceramic material.

25. (Previously Presented) Medical or dental handpiece according to
claim 22,

wherein

the ceramic material is silicon nitride.

26. (Previously Presented) Transmission arrangement for a medical or dental handpiece, for the production of a drive connection between a drive part and a treatment tool,

wherein the transmission arrangement comprises at least two planetary transmission stages connected one after another, each of which has

- a sun gear mounted on a drive shaft,
- a planetary gear carrier having three uniformly distributed planetary gears cooperating with the sun gear, and
- a hollow gear, fixed to a housing, surrounding the planetary gears, having an inner toothed ring,

and wherein the planetary gear carrier of at least one transmission stage serves as drive shaft and carrier of the sun gear of the following transmission stage,

wherein

the drive shaft for each transmission stage is extended beyond the sun gear driven thereby and in the planetary gear carrier belonging to this sun gear is arranged rotatably on the extension.

27. (Previously Presented) Medical or dental handpiece according to claim 26,

wherein

the planetary gear carriers of all transmission stages are hollow shafts and the extension of the drive shaft for the first transmission stage extends substantially over the entire length of the transmission arrangement, centrally through openings formed in the planetary gear carriers.

28. (Currently Amended) Transmission arrangement for a medical or dental handpiece, for the production of a drive connection between a drive part and a treatment tool,

wherein the transmission arrangement comprises at least two planetary transmission stages connected one after another, each which has

- a sun gear mounted on a drive shaft,
- a planetary gear carrier having three uniformly distributed planetary gears cooperating with the sun gear, and
- a hollow gear, fixed to a housing, surrounding the planetary gears, and having an inner toothing,

wherein the planetary gear carrier of at least one transmission stage serves as drive shaft and carrier of the sun gear of the following transmission stage,

~~wherein~~

the hollow gears for all transmission stages are formed by a single sleeve-like component having an inner toothing, and the drive shaft extends beyond the sun gear.

29. (Currently Amended) Transmission arrangement for a medical or dental handpiece, for the production of a drive connection between a drive part and a treatment tool,

wherein the transmission arrangement comprises at least one planetary transmission, which has

- a sun gear mounted on a drive shaft, the drive shaft extending beyond the sun gear,
- a planetary gear carrier having a plurality of uniformly distributed planetary gears cooperating with the sun gear, and
- a hollow gear, fixed to a housing, surrounding the planetary gears, having an inner toothing,

wherein

components of the planetary transmission comprise a ceramic material.

30. (Previously Presented) Transmission arrangement according to
claim 29,

wherein

the ceramic material is silicon nitride.

REMARKS

This paper is in response to the non-final official action of August 22, 2007, where claims 1-30 were pending, claims 1-26 and 28-30 were rejected, and claim 27 was objected to. By this amendment, claims 1, 8, 11, 12, 16, 18, 20, and 24 are amended to address indefiniteness rejections only and not to define over the cited art. Claims 6, 22, 28, and 29 are amended to further define the invention. Support for the amendments to claims 1, 6, 8, 11, 12, 16, 18, 20, 22, 24, 28, and 29 may be found in the specification and claims as originally filed. No new matter is added. As a result, claims 1-30 remain pending and at issue.

Additionally, the applicant thanks the examiner for his acknowledgement of the allowable subject matter recited by claims 2, 9, and 27.

35 U.S.C. § 112 Rejections

Claims 1-5, 8-21, and 24 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The applicants respectfully traverse the rejections and submit that they should be withdrawn.

Claims 1, 8, 11, 12, 16, 18, 20, and 24 are amended herein to address the § 112 rejections. The applicant respectfully submits that claims 1-5, 8-21, and 24 were not indefinite under 35 U.S.C. §112, however, because a claim is considered definite as long as "the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent." *See M.P.E.P. §2173*. Nevertheless, the rejections of claims 1-5, 8-21, and 24 for indefiniteness should be withdrawn in view of the amendments to claims 1, 8, 11, 12, 16, 18, 20, and 24 presented herein.

35 U.S.C. § 102 Rejections

The applicant respectfully traverses the rejection of claims 1, 3, 4, 11-13, 18, 20, 21, and 26 as anticipated by U.S. Patent No. 5,569,034 to Meller et al. ("Meller").

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628 (Fed. Cir. 1987). Each of claims 1, 3, 4, 11-13, 18, 20, 21, and 26 recites a medical or dental handpiece comprising, in part, a drive shaft that extends beyond a sun gear driven by the drive shaft. Meller fails to disclose or suggest a drive shaft that extends beyond a sun gear driven by the drive shaft.

Meller discloses a dental handpiece including drive shaft 20 and a gear member 40 on the drive shaft. However, the drive shaft 20 does not extend beyond the gear member 40, nor could the drive shaft 20 extend beyond the gear member 40. In order for the drive shaft to extend beyond the sun gear, as is recited by each of claims 1-30, the sun gear must have an opening extending longitudinally through the sun gear along the axis of rotation. *See* the instant application, Fig. 1. As is clearly seen in Fig. 4 of Meller, the gear member 40 has a solid face. In other words, there is no opening in the gear member 40 that runs longitudinally through the gear member 40. Thus, the drive shaft 20 can not possibly extend beyond the gear member 40. As a result, Meller fails to disclose or suggest every element recited in each of claims 1-30. The applicant respectfully requests withdrawal of the rejection of claims 1, 3, 4, 11-13, 18, 20, 21, and 26 as anticipated by Meller.

35 U.S.C. § 103 Rejections

The applicant respectfully traverses the rejection of claims 5-8, 10, 14-17, 19, 22-25, and 28-30 as obvious over Meller or obvious over Meller in view of U.S. Patent Publication No. 2004/0048711 to Lev et al. (“Lev”). To establish a *prima facie* case of obviousness, “all the claim limitations must be taught or suggested by the prior art.” *In re Royka*, 490 F.2d 981 (CCPA 1974), and M.P.E.P. § 2143.03. Each of

claims 5-8, 10, 14-17, 19, 22-25, and 28-30 now recites a drive shaft that extends beyond a sun gear. As shown above, Meller fails to disclose or suggest a drive shaft that extends beyond a sun gear driven by the drive shaft.

Lev also fails to disclose or suggest a drive shaft that extends beyond a sun gear driven by the drive shaft, nor was Lev cited as disclosing such an element. Lev discloses a ceramic coated sun gear. However, Lev fails to disclose or suggest a drive shaft of any sort, let alone a drive shaft that extends beyond a sun gear driven by the drive shaft. Thus, none of claims 5-8, 10, 14-17, 19, 22-25, and 28-30 can be rendered obvious by any combination of Meller and Lev because Meller and Lev fail to disclose or suggest each and every claim element. The applicant respectfully requests withdrawal of the rejection of claims 5-8, 10, 14-17, 19, 22-25, and 28-30.

Conclusion

In view of the foregoing, reconsideration and withdrawal of the indefiniteness rejection and allowance of all claims 1-30 is believed to be proper, and is solicited.

Should the examiner wish to discuss the foregoing or any matter of form in an effort to advance this application toward allowance, he is urged to telephone the undersigned at the indicated number.

Respectfully submitted,

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November 2, 2007

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